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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,036	03/16/2001	Mark Allmen	37112-167615	5594
26694 7590 02/26/2007 VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER SENF1, BEHROOZ M	
			ART UNIT	PAPER NUMBER
			2621	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/809,036	Applicant(s) ALLMEN ET AL.	
	Examiner Behrooz Senfi	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/14/2006 has been entered.

Response to Amendment

2. Applicant's arguments with have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 16 - 17 and 25 - 26 are rejected under 35 U.S.C. 103 because the claimed invention is directed to non-statutory subject matter.

Claims 17 and 26 is directed to "a computer readable medium having software for performing". As stated in page 7 of the specification; the computer readable medium may be a carrier wave. This evident shows the computer readable medium is non-statutory and therefore; fails to satisfy the Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (Official Gazette Notice of 22 November 2005).

Claims 16 and 25 are directed to "a computer system for performing". As stated in page 5 of the specification; a computer system comprising "a computer readable medium"; therefore it is consider non-statutory for the same reason as stated in regards to claims 17 and 26 above.

Examiner makes suggestion to change the claim language from "a computer readable medium having software for performing" to **"a computer readable memory medium stored thereon software for performing"**.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 – 10, 11, 16 – 21, 25 – 27 and 30 - 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al (US 5,896,176) in view of Yang (US 6,490,319).

Regarding claims 1 and 18, Das '176 teaches, a video compression method and system (fig. 3) for encoding a video sequence having a plurality of frames (fig. 1), the video sequence comprising a background composite and foreground regions (figs. 13a – 13l, col. 4, lines 65 – 67); Das '176 also suggest encoding video sequence including composite background (stationary background) and foreground, and the background is

transmitted once and the foreground/moving object is encoded per frame (col. 4, lines 65 – col. 5, lines 10 and col. 15, lines 13 – 21).

Das '176 is silent in regards to explicit of "balancing bits per pixel between the background and foreground" to achieve similar quality between the regions.

Yang '319 in the same field, teaches a bit rate controlling technique that utilizes adaptive quantization levels to adjust the quality of regions of a video image by bit balancing between the background and foreground regions, and achieving real-time performance (col. 1, line 56 – col. 2, line 7, col. 3, line 33-42, col. 5, line 23-28, see also fig. 4 and its respective disclosure). Yang disclosure teaches, a video system including video camera 202 which capture and transmits a sequence of video images/frames (i.e. as stated in the specification "page 13" of the instant application; video sequence is obtained from a video, and video includes; television, movie, image sequence from a video camera or other observer and further states that, video sequence includes one or more frames of the video or can be a portion of the video or the entire video) to codec 204 for encoding and decoding/reconstruction of the video images/frames (i.e. fig. 2). The processing is based on controlling the quantization, bits per pixel (note; image is made of pixel elements) to adjust the video quality of the video frame/image, which includes a background and foreground/region of interest on a series of frame/image (i.e. abstract, col. 1, lines 55 – 60, col. 3, lines 1 – col. 4, lines 35, col. 5, lines 11 – 22), which are being reconstructed by codec 204.

In view of the above, taking the combined teaching of Das '176 and Yang '319, it would have been obvious to one having ordinary skill in the art at the time of the

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invention was made to adopt the technique of bit balancing between the background and foreground regions as taught by Yang and apply the same to encoding video sequence of Das to balance the bits between background composite and foreground/object regions as claimed, to achieve real-time bit rate control that results in no quality contrast differential between the background composite and foreground regions.

Regarding claim 2, the limitations claimed have been analyzed and rejected with respect to claim 1 above.

Regarding claim 3, Das teaches the claimed, shape of foreground (col. 9, lines 64 – 66).

Regarding claims 4 and 7, which further recite wherein the bits per pixel for background and bits per pixel for foreground are related by a balancing factor, see (Yang, col. 5, lines 13 – 22).

Regarding claims 5 – 6, which further recite balancing factor comprises a correction factor (claim 5), and balancing factor comprises a quality factor (claim 6), the claimed limitations reads on quantization rate controller and bit balancing which have been analyzed and rejected with respect to claim 1 above.

Regarding claim 8, Das '176 is silent in regards to actual number of bits.

Das teaches, a video compression method and system (fig. 3) for encoding a video sequence having a plurality of frames (fig. 1), the video sequence comprising a background composite and foreground regions (figs. 13a – 13l, col. 4, lines 65 – 67); Das '176 also suggest encoding video sequence including composite background

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(stationary background) and foreground, and the background is transmitted once and the foreground/moving object is encoded per frame (col. 4, lines 65 – col. 5, lines 10 and col. 15, lines 13 – 21). Furthermore, Yang '319 teaches that typically, visual quality of the foreground object is achieved at the expense of the background quality, and balancing the quality differential between the regions for real-time performance is difficult when the content and data rate of a video image change (col. 1, line 24-31). Hence, Yang '319 suggests a bit rate controlling technique, which both regions of the video image are quantized to the same level, this quantization level is referred to maximum quantization level for both foreground and background provides an actual bit rate for the video frame, which is close to the target bit rate (col. 1, line 56 – col. 2, line 7, col. 3, line 33 - 42).

In view of the above, taking the combined teaching of Das and Yang as a whole, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to adopt the technique of bit balancing (quantization control) between the background and foreground regions as taught in Yang and apply the same to balance the bits between background composite and foreground regions as claimed to achieve real-time bit rate control that results in no quality contrast differential between the background composite and foreground regions.

Regarding claims 9 and 20, iterative processing/encoding as claimed is shown in Das (fig. 3).

Regarding claim 10, Das '176 is silent in regards to "determining an estimated background quantization step based on an estimated number of bits for the compressed

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background composite and the number of bits for the compressed background composite”.

However, such features are well known and used in the prior art of the record, as evidenced by Yang (i.e. col. 3, lines 33 – 42) wherein, “an estimated background quantization step” reads on (Qmax), and “estimated number of bits for the compressed background,” reads on (target bit rate, R), and “number of bits for the compressed background composite” reads on (actual bit rate).

Regarding claim 11, the combined teaching of Das and Yang as analyzed and rejected with respect to claims 1 and 18 above also teaches determining a starting foreground quantization step for the foreground regions based on a background quantization step for the background composite and a desired bit rate (Yang; col. 3, lines 33 – 42).

Regarding claims 16 – 17, which recite a computer system and a computer-readable medium to carry out the process reads on disclosure of combined teaching of Das and Yang, which is a computer implemented method and system.

Regarding claims 19 and 27, the limitations claimed have been analyzed and rejected with respect to claims 1, 8 and 11 above.

Regarding claim 21, the limitations claimed have been analyzed and rejected with respect to claim 10 above.

Regarding claims 25 – 26, the limitations claimed have been analyzed and rejected with respect to claims 16 – 17 above.

Regarding claims 30 - 31, the limitations claimed have been analyzed and rejected with respect to claim 1 above.

7. Claims 12 – 15, 22 – 24 and 28 - 29, are rejected under 35 U.S.C. 103(a) as being unpatentable over Das '176 in view of Yang '319 further in view of Ryoo (US 5,990,957).

Regarding claims 15 and 24, combination of Das '176 and Yang '319 teaches, encoding the video sequence based on balancing bits per pixel as analyzed and rejected with respect to claim 1 above.

The combined teaching of Das and Yang is silent in regards to block skipping/dropping for encoding.

Ryoo '957 in the same field (i.e. col. 7, lines 20 – 34) teaches block skipping and block variance to estimate/control the bit amount/rate of each video object. The combined teaching of Das and Yang as applied to claim 1 above has obviated bit balancing.

Therefore, taking the combined teaching of Das and Yang and Ryoo as a whole, it would have been obvious to one skilled in the art at the time of the invention was made to control the bit amount of each video object by determining the picture/block variance and frame skipping as taught by Ryoo (col. 7, lines 20 – 34) for the benefit of efficiently allocating appropriate bit amount to each video object (col. 2, lines 6 – 11, Ryoo).

Regarding claim 12, the limitations claimed have been analyzed and rejected with respect to claim 15 above.

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Regarding claims 13 – 14, combination of Das and Yang and Ryoo teaches, frame dropping, as discussed with respect to claim 12, and temporal sub-sampling and bit-budget, claim 13 (col. 11, lines 45 – 55 of Ryoo, and also col. 5, lines 13 – 20 of Yang), and actual number of bits, claim 14 (Yang, col. 3, lines 35 – 40).

Regarding claims 22 - 23, the limitations claimed have been analyzed and rejected with respect to claims 12 – 13 above.

Regarding claims 28 – 29, the limitations claimed have been analyzed and rejected with respect to claims 22 and 24 above.

Contact

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Behrooz Senfi** whose telephone number is **(571) 272-7339**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mehrdad Dastouri** can be reached on **(571) 272-7418**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(571) 273-8300


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Hand-delivered responses should be brought to Randolph Building, 401 Dulany Street, Alexandria, Va. 22314.

Any inquiry of a general nature or relative to the status of the application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is **(571) 272-6000**.

B. M. S.

2/16/2007



TUNGVO
PRIMARY EXAMINER